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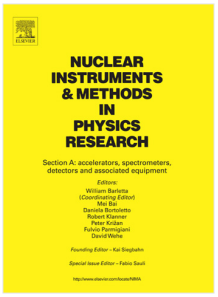

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J.W. Kwon, H.J. Woo, G.D. Kim, Y.S. Chung, E.-S. Kim

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Beam position monitor for superconducting post-linac in RAON

J.W. Kwon[a,b], H. J. Woo[a], G. D. Kim[a], Y. S. Chung[a], E.-S. Kim[b,*]

[a] *Rare Isotope Science Project, Institute for Basic Science (IBS), Daejeon 34047, Korea*
[b] *Department of Accelerator Science, Graduate School, Korea University, Sejong, Korea*

Abstract

The Rare-isotope Accelerator complex for ON-line experiments (RAON) is an accelerator for heavy ions, such as uranium and oxygen. To correct the beam trajectory in the post-linac with low-β, we developed a beam position monitor. In the post-linac, the beam is accelerated from 0.5 MeV/u to 18.5 MeV/u, and each bunch has an electric charge of less than 10 pC. To achieve higher signal strength and better linearity, we investigated stripline- and button-type beam position monitor (BPM) and designed the BPMs with CST Particle Studio. We have fabricated a button-type BPM. We tested 10 BPMs by using a wire test stand to achieve the characterization of each BPM, including the calibration factor with single-pass H electronics of I-Tech. The developed wire test stand has a stretched wire and is movable in the 2D plane with servomotors. In this paper, we present the results of the design, fabrication, and off-line test of a button-type BPM for a low-β, heavy-ion beam.

Keywords: linear accelerator, beam diagnostics, beam position monitor

1. INTRODUCTION

The layout of the rare-isotope accelerator complex for on-line experiments (RAON) is shown as Fig. 1 [1].

*Corresponding author
Email address: eskim1@korea.ac.kr (E.-S. Kim)